

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Anja KNUPPEL et al.

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Examiner: Katamneni, Shobha

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For : USE OF POLYURETHANES FOR IMPROVING THE WATER RESISTANCE
OF COSMETIC AND DERMATOLOGICAL FORMULATIONS

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Commissioner for Patents
U.S. Patent and Trademark Office
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Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

This Appeal is from the Examiner's Final Rejection of claims 64-109 set forth in the Final Office Action mailed from the U.S. Patent and Trademark Office on January 29, 2008.

A Notice of Appeal in response to the January 29, 2008 Final Office Action was filed on April 29, 2008.

The requisite fee under 37 C.F.R. § 41.20(b)(2) for filing this Appeal Brief and the fee for a three-month extension of time are being paid concurrently herewith.

The Patent and Trademark Office is hereby authorized to charge any additional fees which may be deemed necessary for maintaining the pendency of this application to Deposit Account No. 19-0089.

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Beiersdorf AG of Hamburg, Germany. The corresponding assignment was recorded in the U.S. Patent and Trademark Office on April 15, 2002 at REEL 012812, FRAME 0353.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' representative or the Assignee are not aware of any prior and pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

The status of the claims is as follows:

Claims 1-63 are cancelled.

Claims 64-109 are pending in this application.

Each of claims 64-109 is indicated as rejected in the Final Office Action mailed January 29, 2008.

The rejection of each of claims 64-109 is under appeal. Claims 64-109 involved in the appeal are reproduced in the Claims Appendix attached hereto.

IV. STATUS OF AMENDMENTS

No Amendment has been filed subsequent to the Final Office Action mailed January 29, 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Claim 64

Independent claim 64 is drawn to a method of improving the water resistance of an O/W formulation. The method comprises incorporating into the O/W formulation at least one film-forming, water-soluble or water-dispersible polyurethane which has a K value of from 15 to 100.

See, e.g., page 3, line 32 to page 4, line 18, page 7, lines 4-6, page 31, lines 3-8, and 20-22 of the present specification.

B. Claim 87

Independent claim 87 is drawn to a method of improving the water resistance of an O/W formulation which comprises at least one UV filter substance. The method comprises incorporating into the O/W formulation at least one film-forming, water-soluble or water-dispersible polyurethane having a K value of from 25 to 100 in an amount which results in a concentration of the at least one polyurethane of from 0.1% to 10% by weight, based on the total weight of the formulation.

See, e.g., page 3, line 32 to page 4, line 24, page 9, lines 27-28, and page 31, lines 3-10 and 20-22 of the present specification.

C. Claim 99

Independent claim 99 is drawn to a method of improving the water resistance of an O/W emulsion which comprises at least one UV filter substance. The method

comprises incorporating into the O/W emulsion at least one film-forming, water-soluble or water-dispersible polyurethane having a K value of from 25 to 100.

See, e.g., page 3, line 32 to page 4, line 24, page 9, lines 27-28, and page 31, lines 3-10 of the present specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The broad issues under consideration are:

1. Whether claims 64-75, 78, 87-92 and 99-104 are properly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kantner et al., U.S. Patent No. 6,433,073 (hereafter “KANTNER”) in view of Kim et al., U.S. Patent No. 6,372,876 (hereafter “KIM”) and further in view of the Handbook of Cosmetic Science and Technology (hereafter “HANDBOOK”) and in particular, whether the disclosures of KANTNER, KIM and HANDBOOK are sufficient to establish a *prima facie* case of obviousness of the subject matter of claims 64-75, 78, 87-92 and 99-104.

2. Whether claims 77, 79-86, 94-98 and 105-109 are properly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over KANTNER in view of KIM and HANDBOOK and further in view of Koch et al., U.S. Patent No. 6,258,963 (hereafter “KOCH”) and in particular, whether the disclosures of KANTNER, KIM, HANDBOOK and KOCH are sufficient to establish a *prima facie* case of obviousness of the subject matter of claims 77, 79-86, 94-98 and 105-109.

3. Whether claims 76 and 93 are properly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over KANTNER in view of KIM and HANDBOOK and

further in view of Gers-Barlag et al., U.S. Patent No. 5,725,844 (hereafter “GERS-BARLAG”) and in particular, whether the disclosures of KANTNER, KIM, HANDBOOK and GERS-BARLAG are sufficient to establish a *prima facie* case of obviousness of the subject matter of claims 76 and 93.

VII. ARGUMENTS

A. Citation of Authority

The appropriate starting point for a determination of obviousness is stated in

Graham v. John Deere Co., 383 U.S. 1, 17, 148 U.S.P.Q. 459, 466 (1966):

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

The test of obviousness *vel non* is statutory and requires a comparison of the claimed subject matter as a whole with the prior art to which the subject matter pertains. *In re Brouwer*, 77 F.3d, 422, 37 U.S.P.Q. 2d 1663 (Fed. Cir. 1996); *In re Ochiai*, 71 F.3d 1565, 37 U.S.P.Q. 2d 1127 (Fed. Cir. 1995).

Often, it will be necessary to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. This analysis should be made explicit. There must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741. “A

patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 1741.

“If the Examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned.” *In re Rijckaert*, 9 F.3d, 1532, 28 U.S.P.Q.2d, 1956 (Fed. Cir. 1993), citing *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

B. Claims 64-75, 78, 87-92 And 99-104 Are Not Properly Rejected Under 35 U.S.C. 103(a) As Being Unpatentable Over KANTNER In View Of KIM And HANDBOOK

1. Summary of Rejection

The rejection alleges that KANTNER discloses oil-in-water cosmetic compositions which comprise a film-forming polyurethane and have properties such as water-resistance and transfer resistance. The rejection further points to Tables XVI and XVII in column 27 of KANTNER in this regard. The rejection concedes that KANTNER fails to explicitly teach the K-values and the glass transition temperatures of the polyurethanes recited in the present claims (and also fails to teach microemulsions). In this regard, the rejection relies on KIM (and HANDBOOK) and essentially alleges that KIM discloses polyurethanes which are soluble or dispersible in water as aids in cosmetic compositions and have K values and glass transition temperatures that meet the recitations of the rejected claims. The rejection further asserts that it would have been

obvious to one of ordinary skill in the art to employ the polyurethanes of KIM in the compositions of KANTNER because both KANTNER and KIM allegedly are directed toward water soluble/dispersible polyurethanes for use in cosmetics and because of the expectation of achieving a sunscreen product that is resistant to humidity or water. HANDBOOK is cited by the Examiner merely in an attempt to support the allegation that it would have been obvious to provide the cosmetic compositions of KANTNER in the form of an emulsion.

2. Response

Appellants submit that the disclosures of KANTNER and KIM are irreconcilable as far as the required properties of the polyurethanes for cosmetic (hair care and styling) purposes disclosed therein are concerned, wherefore one of ordinary skill in the art would be discouraged rather than motivated to use the polyurethanes of KIM in the cosmetic compositions of KANTNER.

In particular, a closer look at the polyurethanes of KANTNER and the polyurethanes of KIM reveals that the latter polyurethanes are stated to have properties which make them appear unsuitable for the cosmetic preparations of KANTNER. Specifically, in col. 5, lines 29-42 KANTNER states (emphases added):

A further advantage of the inventive composition is its ability to form hydrophobic films making it useful in cosmetic applications. Such applications require some amount of water resistance, transfer resistance, or substantivity to skin, nails or hair. The applications include, e.g., makeup cosmetic or protective cosmetic applications such as mascara, foundation, rouge, face powder, eyeliner, eyeshadow, insect repellent, nail polish, skin moisturizer, skin cream and body lotion, lipstick, and sunscreen.

When the inventive dispersion is used in hair care products, such as shampoos and conditioners and the like, the dispersion can provide faster drying. It can also

improve the humidity resistance of hair styling agents when used at low levels in combination with other hair styling resins.

In comparison, the cosmetic polyurethane solutions or dispersions of KIM are intended for use in hair treatment compositions in the form of hair setting preparations or sprays which are used for setting, improving the structure and shaping the hair. For example, all of the exemplary compositions which are described in col. 8 of KIM are hair setting compositions, and claims 1-3 are directed to a method of treating hair (independent claim 6 is directed to a method of coating or binding a pharmaceutical composition). Further, in col. 1, lines 36-54 KIM states (emphases added):

In cosmetics, hair-treatment compositions which are, for example, in the form of setting preparations or sprays are used for setting, improving the structure and shaping the hair. These compositions are composed mainly of a solution of film-forming resins or synthetic polymers. The following film formers have hitherto been mainly used in such compositions: shellac, homo- and copolymers of N-vinylpyrrolidone, copolymers of vinyl ethers and maleic monoesters, of (meth)acrylic acid or the esters and amides thereof and crotonic acid with vinyl esters.

The hair-treatment compositions are applied to the hair by spraying in the form of solutions, preferably in ethanol. After the solvent has evaporated, the hair is held in in [sic] the desired shape by the polymer remaining at the points of contact. The polymers must, on the one hand, be sufficiently hydrophilic to be washed out of the hair but, on the other hand, be hydrophobic so that hair treated with the polymers retains its shape and does not become sticky even when the humidity is high.

Accordingly, the above passages of KANTNER and KIM make it clear that the polyurethanes described in these two documents show conflicting properties. For example, while the polyurethanes of KANTNER, when used in cosmetic compositions, must be sufficiently hydrophobic so that they are not washed off when the skin or the hair comes into contact with water (otherwise these polyurethanes would not be able to provide water resistance or substantivity to skin, nails or hair), the polyurethanes of KIM must be "sufficiently hydrophilic to be washed out of the hair".

Further, according to KIM the polyurethanes disclosed therein must not make the hair sticky even when the humidity is high (see, e.g., col. 1, lines 50-54). In contrast, the polyurethanes of KANTNER must show a certain degree of stickiness as evidenced, e.g., by the fact that they are suitable for use in cold seal adhesive compositions (see also the peel values set forth in Tables V and IX for the polyurethanes of Examples 16 and 36 which are used in all of the Cosmetic Examples of KANTNER). This stickiness would appear to explain that KANTNER mentions that the polyurethanes described therein can also improve the humidity resistance of hair styling agents (which appear to include hair setting compositions such as those disclosed in KIM), but only "when used at low levels in combination with other hair styling resins".

In view of the foregoing differences, it is no coincidence that the polyurethane containing hair treatment compositions of KANTNER, i.e., shampoos, conditioners and the like (see, e.g. the compositions of Cosmetic Examples 7 to 19 of KANTNER), are very different from the hair treatment compositions of KIM, i.e., hair setting compositions such as hair sprays.

For example, a polyurethane which is used in a shampoo must be capable of adhering, in the presence of significant amounts of water, to hair in order to impart substantivity thereto (a desired property of the polyurethanes of KANTNER). In contrast, a polyurethane used for a hair setting composition such as, e.g., a hair spray must be capable of being washed out when the hair is rinsed with water (a desired property of the polyurethanes of KIM, see col. 1, lines 50/51).

Further, the ability of the polyurethanes of KIM of being readily rinsed off by water clearly is an extremely undesirable property if these polyurethanes are to be used

for a waterproof sunscreen or insect repellent composition such as, e.g., the oil-in-water emulsion of Cosmetic Example 1 of KANTNER.

At any rate, it is pointed out that, while KIM refers broadly to cosmetic compositions, hair treatment compositions and in particular, hair setting compositions are the only cosmetic compositions that are specifically described in KIM. The only other use of the polyurethanes of KIM that can be considered to be described therein is that as a coating and binding agent for pharmaceuticals (see, e.g., claim 6 of KIM). In contrast thereto, KANTNER does not appear to mention any potential use of the polyurethanes described therein in the pharmaceutical field, let alone as coating or binding agents.

It further is noted that both at page 5, first paragraph and pages 8 and 9 of the January 29, 2008 Final Office Action the Examiner appears to equate humidity resistance and water resistance, essentially asserting that since both KANTNER and KIM allegedly teach that the polyurethanes disclosed therein impart humidity resistance, one of ordinary skill in the art would be motivated to use the polyurethanes of KIM to impart water resistance to the cosmetic (hair care) compositions of KANTNER.

In this regard, Appellants submit that humidity resistance and water resistance are entirely different properties. Particularly, as indicated in col. 1, lines 50-54 of KIM, humidity resistance in the context of hair styling means that hair retains its shape and does not become sticky even when the humidity is high. Water resistance in the context of cosmetics on the other hand means that the polyurethane is not immediately dissolved and/or rinsed off when it comes into contact with water.

That a polyurethane which is soluble in water (i.e., lacks water resistance) can nevertheless impart a high degree of humidity resistance is illustrated by polyurethane

No. 5 in the table at the bottom of col. 8 of KIM (used in the hair setting compositions (d) and (e) set forth in col. 8). This polyurethane is indicated to be soluble in pure water but nevertheless provides 75 % of curl retention after 5 h at 25°C and 90% rel. humidity, one of the highest curl retention values measured for the seven polyurethanes tested.

To sum up, for at least all of the foregoing reasons one of ordinary skill in the art would not be motivated to use the polyurethanes of KIM in the compositions of KANTNER. In fact, the mutually exclusive characteristics of the polyurethanes set forth in KANTNER and KIM even constitute a disincentive for one of ordinary skill in the art to combine the teachings of these two documents.

HANDBOOK does not relate to the use of polyurethanes in cosmetic compositions and for this reason alone, is unable to cure the deficiencies of KANTNER and KIM set forth above.

Appellants submit that for at least all of the foregoing reasons, the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter of claims 64-75, 78, 87-92 and 99-104 over KANTNER in view of KIM and HANDBOOK.

C. Claims 77, 79-86, 94-98 And 105-109 Are Not Properly Rejected Under 35 U.S.C. 103(a) As Being Unpatentable Over KANTNER In View Of KIM, HANDBOOK And KOCH

Appellants note that all of the rejected claims 77, 79-86, 94-98 and 105-109 are dependent claims. Moreover, the disclosure of KOCH (which has been cited by the Examiner only with respect to the UV filter substances recited in the rejected claims) apparently is unable to cure the deficiencies of KANTNER, KIM and HANDBOOK discussed in section VII.B.2. above. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter of claims 77, 79-86, 94-98 and 105-

109 over KANTNER in view of KIM, HANDBOOK and KOCH for at least all of the reasons which are set forth in section VII.B.2. above.

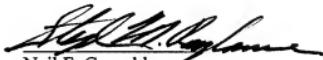
D. Claims 76 And 93 Are Not Properly Rejected Under 35 U.S.C. 103(a) As Being Unpatentable Over KANTNER In View Of KIM, HANDBOOK And GERS-BARLAG

Appellants note that claims 76 and 93 are dependent claims. Moreover, the disclosure of GERS-BARLAG (which has been cited by the Examiner only with respect to the hydrodispersions recited in the rejected claims) apparently is unable to cure the deficiencies of KANTNER, KIM and HANDBOOK discussed in section VII.B.2. above. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter of claims 76 and 93 over KANTNER in view of KIM, HANDBOOK and GERS-BARLAG for at least all of the reasons which are set forth in section VII.B.2. above.

VIII. CONCLUSION

Appellants respectfully submit that for at least all of the foregoing reasons, the Examiner has failed to establish a *prima facie* case of obviousness of any of claims 64-109 over KANTNER, KIM, HANDBOOK, KOCH and GERS-BARLAG, which is a prerequisite for maintaining a rejection under 35 U.S.C. § 103. The Board is, therefore, respectfully requested to reverse the Final Rejection, and to allow the application to issue in its present form.

Respectfully submitted,
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CLAIMS APPENDIX

64. A method of improving the water resistance of an O/W formulation, wherein the method comprises incorporating in the O/W formulation at least one film-forming, water-soluble or water-dispersible polyurethane which has a K value of from 15 to 100.

65. The method claim 64, wherein the O/W formulation further comprises at least one UV filter substance.

66. The method of claim 64, wherein the at least one polyurethane has a K value of from 25 to 100.

67. The method of claim 66, wherein the at least one polyurethane has a K value of up to 50.

68. The method of claim 64, wherein the at least one polyurethane comprises at least one of an anionic polyurethane and a salt thereof.

69. The method of claim 68, wherein the at least one of an anionic polyurethane and salt thereof comprises at least one of a polyurethane A of (a) at least one compound comprising two or more active hydrogen atoms per molecule, (b) at least one diol comprising at least one of an acid group and a salt group, and (c) at least one diisocyanate; and a salt of polyurethane A.

70. The method of claim 69, wherein polyurethane A has a glass transition temperature of at least 15°C and an acid number of from 12 to 150.

71. The method of claim 64, wherein the at least one polyurethane comprises at least one of a cationic polyurethane, a cationic polyurea and a salt thereof.

72. The method of claim 71, wherein the at least one polyurethane comprises at least one of a cationic polyurethane and a cationic polyurea of (a) at least one diisocyanate which may have been pre-reacted with one or more compounds comprising two or more active hydrogen atoms per molecule, (b) at least one substance selected from diols, primary and secondary aminoalcohols, primary and secondary diamines, and primary and secondary triamines having one or more tertiary, quaternary or protonated tertiary amino nitrogen atoms; and a salt thereof.

73. The method of claim 72, wherein the at least one polyurethane has a glass transition temperature of at least 25°C and an amine number of from 50 to 200.

74. The method of claim 64, wherein the O/W formulation comprises an emulsion.

75. The method of claim 64, wherein the O/W formulation comprises a microemulsion.

76. The method of claim 64, wherein the O/W formulation comprises a hydrodispersion.

77. The method of claim 65, wherein the at least one UV filter substance comprises a water-soluble UV filter substance.

78. The method of claim 64, wherein the at least one polyurethane is added to the O/W formulation in an amount which results in a concentration of the at least one polyurethane of from 0.1% to 10% by weight of, based on a total weight of the formulation.

79. The method of claim 65, wherein the at least one UV filter substance comprises one or more water-soluble UV-A filter substances.

80. The method of claim 79, wherein the at least one UV filter substance comprises at least one of phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid, 1,4-di(2-oxo-10-sulfo-3-bornylidene-methyl)benzene and salts thereof.

81. The method of claim 80, wherein the at least one UV filter substance comprises at least one of a sodium, potassium and triethanolammonium salt and a 10-sulfato compound of at least one of phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid and 1,4-di(2-oxo-10-sulfo-3-bornylidene-methyl)benzene.

82. The method of claim 65, wherein the at least one UV filter substance comprises at least one broadband UV filter.

83. The method of claim 82, wherein the at least one UV filter substance comprises at least one bisresorcinyltriazine compound.

84. The method of claim 83, wherein the at least one UV filter substance comprises 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine.

85. The method of claim 65, wherein the at least one UV filter substance comprises at least one benzotriazole compound.

86. The method of claim 85, wherein the at least one UV filter substance comprises at least one of 2,2'-methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)-phenol) and 2-(2H-benzotriazol-2-yl)-4-methyl-6-[2-methyl-3-[1,3,3,3-tetramethyl-1-[(trimethylsilyl)oxy]disiloxanyl]propyl]phenol.

87. A method of improving the water resistance of an O/W formulation which comprises at least one UV filter substance, wherein the method comprises incorporating into the O/W formulation at least one film-forming, water-soluble or water-dispersible polyurethane having a K value of from 25 to 100 in an amount which results in a concentration of the at least one polyurethane of from 0.1% to 10% by weight, based on a total weight of the formulation.

88. The method of claim 87, wherein the at least one polyurethane has a K value of up to 50.

89. The method of claim 87, wherein the at least one polyurethane comprises at least one of an anionic polyurethane and a salt thereof.

90. The method of claim 87, wherein the at least one polyurethane comprises at least one of a cationic polyurethane, a cationic polyurea and a salt thereof.

91. The method of claim 87, wherein the O/W formulation comprises an emulsion.

92. The method of claim 87, wherein the O/W formulation comprises a microemulsion.

93. The method of claim 87, wherein the O/W formulation comprises a hydrodispersion.

94. The method of claim 87, wherein the at least one UV filter substance comprises a water-soluble UV filter substance.

95. The method of claim 94, wherein the at least one UV filter substance comprises at least one of phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid, 1,4-di(2-oxo-10-sulfo-3-bornylidene-methyl)benzene and salts thereof.

96. The method of claim 87, wherein the at least one UV filter substance comprises at least one broadband UV filter.

97. The method of claim 96, wherein the at least one UV filter substance comprises at least one bisresorcinyltriazine compound.

98. The method of claim 87, wherein the at least one UV filter substance comprises at least one benzotriazole compound.

99. A method of improving the water resistance of an O/W emulsion which comprises at least one UV filter substance, wherein the method comprises incorporating into the O/W emulsion at least one film-forming, water-soluble or water-dispersible polyurethane having a K value of from 25 to 100.

100. The method of claim 99, wherein the at least one polyurethane has a K value of up to 50.

101. The method of claim 99, wherein the at least one polyurethane comprises at least one of an anionic polyurethane and a salt thereof.

102. The method of claim 99, wherein the at least one polyurethane comprises at least one of a cationic polyurethane, a cationic polyurea and a salt thereof.

103. The method of claim 99, wherein the at least one UV filter substance comprises a water-soluble UV filter substance.

104. The method of claim 103, wherein the at least one polyurethane is added to the O/W formulation in an amount which results in a concentration of the at least one polyurethane of from 0.1% to 10% by weight, based on a total weight of the formulation.

105. The method of claim 104, wherein the at least one UV filter substance comprises one or more water-soluble UV-A filter substances.

106. The method of claim 105, wherein the at least one UV filter substance comprises at least one of phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid, 1,4-di(2-oxo-10-sulfo-3-bornylidene-methyl)benzene and salts thereof.

107. The method of claim 99, wherein the at least one UV filter substance comprises at least one broadband UV filter.

108. The method of claim 107, wherein the at least one UV filter substance comprises at least one bisresorcinyltriazine compound.

109. The method of claim 99, wherein the at least one UV filter substance comprises at least one benzotriazole compound.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.